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Sun-bound Genesis finally on its way

by Martha Heil

Genesis mission operations team members at JPL share traditional “good luck peanuts” a few minutes prior to launch. From left are Don Sweetnam, mission manager; Marla Thornton, ground data system engineer; Nora Mainland, sequence engineer; Jim McClure, flight operations engineer; and Gene Brower, deputy mission manager. The tradition dates back to JPL missions of the 1960s, when the peanuts were passed out at launches and became associated with mission success. Starting with the Voyager mission, the tradition was extended to include planetary encounters.



Photo by Bob Brown / JPL Photolab

Following a number of technical and weather delays, the JPL-managed Genesis spacecraft launched flawlessly atop a Delta 7326 rocket from Florida’s Cape Canaveral Air Station Aug. 8 at 9:13:40 a.m. PDT.

Genesis will become the first mission ever to return a sample of extraterrestrial material from beyond the Moon when it catches a piece of the Sun to return to Earth. Two days after launch, the Genesis team reported that the spacecraft continues to proceed exceedingly well, and that all spacecraft subsystems are performing normally. Genesis’ flight path was adjusted successfully Aug. 10 at about 10:21 a.m. PDT. The small thrusters burned for 53.5 seconds. This moved the spacecraft about 5.2 meters per second (11.6 mph) into a path to reach the Lagrange 1, or L1, point, where the gravities of the Sun and Earth are balanced. Genesis will reach L1 in November 2001. The spacecraft’s next flight-path adjustment is scheduled for early September.



Kennedy Space Center

Among various housekeeping events just after launch, the team commanded the spacecraft to transmit to Earth and brought the spacecraft out of safe mode, a standby state used to keep the spacecraft dormant during launch. Genesis has now communicated with all three of NASA’s Deep Space Network stations—in Goldstone, Calif.; Canberra, Australia; and Madrid, Spain. The team also commanded Genesis to spin at its normal rate, 1.6 revolutions per minute. Genesis will collect pieces of the Sun called solar wind to help scientists better understand our solar system’s development. In September 2004, Genesis will return to Earth, descending to the landing site at the Utah Test and Training Range near Salt Lake City, Utah, an area chosen because it is a vast, desolate and unoccupied salt flat controlled by the U.S. Army and Air Force. The capsule in which the samples are sealed will be slow down with the aid of a parachute and be snagged in mid-air by a helicopter. The precious samples will be airlifted to the Johnson Space Center in Houston, where they will be distributed for scientific analysis and safely curated in order to be available for the next century of planetary science studies.

Galileo completes Io flyby

By Guy Webster

JPL’s Galileo spacecraft successfully completed a flyby of Jupiter’s moon Io on Aug. 6, skimming about 200 kilometers (124 miles) above the surface of the highly volcanic moon. JPL engineers said signals confirming the veteran spacecraft’s basic health were received five and a half hours after the flyby via a Goldstone, Calif., antenna of the Deep Space Network. Initial telemetry did not reveal whether or not Galileo passed through a volcanic plume on Io. Galileo’s route went directly over a volcano named Tvashtar, which had been spouting a tall plume of gases when last observed seven months ago. “As expected, we don’t have any sign at this point that the plume was still active, but whether it was or not, we expect this flyby will give us valuable new information about changes in the Tvashtar area from recent activity,” said JPL’s Dr. Eilene Theilig, Galileo project manager. The area was to be examined by Galileo’s camera and near-infrared mapping spectrometer. Galileo’s camera, which has had an inter-

mittent electronic problem for more than a year, appears not to have been working during the closest part of the flyby. Engineers have narrowed the cause of the problem to one of two electronic components probably damaged by radiation from Jupiter’s radiation belts. Nine or more of the camera’s 16 planned observations during the encounter period were probably lost, Theilig said. The camera was functioning again in time for more-distant observation of Io on Tuesday, Aug. 7. Recorded data from the camera and Galileo’s other instruments will be transmitted to Earth over the next two months. “We’re looking forward to getting data back from the observations to confirm that the scientific instruments worked as planned,” Theilig said. The flyby’s polar route was selected so Galileo could collect magnetic measurements that might indicate whether Io generates its own magnetic field, like Earth, Jupiter and Jupiter’s moon Ganymede. That information could give scientists a better understanding of what goes on deep inside Io, the most

volcanically dynamic world in the solar system. The magnetometer and other instruments for studying fields and particles appear to have been working during the flyby. “All of our previous magnetic measurements at Io have been on equatorial passes, and from those we can’t tell whether the field at Io is induced by Jupiter’s strong magnetic field or produced by Io itself,” said JPL’s Dr. Torrence Johnson, Galileo project scientist. Coming close enough to Jupiter to approach Io subjects Galileo to intense natural radiation from Jupiter’s radiation belts, increasing the risk to the spacecraft’s electronics. “We’re especially satisfied to get the magnetic field measurements that were the highest priority science objective for this flyby,” Theilig said. Galileo has already received more than three times the cumulative radiation exposure it was designed to withstand and has continued making valuable scientific observations more than three years after its original two-year mission in orbit around Jupiter.

News Briefs

“The new traffic flow means that JPLers need to be alert, slow down and be aware of pedestrians and slow-moving construction vehicles.”

Chuck Boles, parking coordinator

Elachi announces senior appointments
Laboratory Director DR. CHARLES ELACHI has announced personnel appointments for three senior JPL managers.
JOHN BECKMAN has been named Director for the Engineering and Science Directorate. Beckman joined JPL in 1971 and has held various management positions on Lab since 1977. In 1998 he was named Systems Division Manager and remained in that position until this year, when he was named the deputy director for the Engineering and Science Directorate.
GAEL SQUIBB has been appointed Special Projects Manager, Office of the Director. Reporting directly to Elachi, Squibb will manage studies and initiatives aimed at improving JPL's operations management, systems, and processes in



John Beckman

the complex multi-mission environment of the future. With JPL since 1968, Squibb has served in numerous management positions, most recently as Director for Telecommunications and Mission Operations.
DR. WILLIAM WEBER III has been named Director for the Interplanetary Network and Information Systems Directorate. Weber has worked at JPL since 1967. He served as manager of the Communications Systems Research Section starting in 1982, and four years later was named manager of the NASA Technology Program. In 1991 he became manager of the Telecommunications Science and Engineering Division, and since 1996 has served as director for the Engineering and Science Directorate.

JPL's east lot gets a new look
JPL's east parking lot is getting a much-deserved and much-needed facelift. The parking lot has been under construction since Aug. 13, with the first phase of construction scheduled to be completed by Friday, Aug. 17. The newly resurfaced and re-stripped lot will provide about 60 more parking spaces. Refurbishing the east lot was one of the priority recommendations made in the final report by the Laboratory's Parking Study Team.
Phase II, the actual re-surfacing and re-stripping, will be done entirely on weekends (Aug. 18–19, through Sept. 1–2), in order to minimize the inconvenience to the JPL community.
The lot will have permanent traffic pattern changes, as well as relocated bus shelters. The inbound lane will run along the east side of the lot, while the outbound lane will roughly follow the path of the current bus lane on the west side. Buses will use the same traffic lanes as cars, and bus shelters will be relocated to new locations. Since the new design has pedestrians crossing vehicle traffic to get to the bus shelters, speed bumps and pedestrian crosswalks will be installed. The maximum speed limit is 20 mph and passing a stopped bus during passenger loading and unloading is not permitted.
In order to generate the 60 more spaces, the newly re-stripped spaces will be what is referred to as a “NASA standard” space—larger than a compact, but smaller than the spaces that had been used previously. A limited number of oversized spaces will be available on the west side of the lot, and two electric vehicle charging stations will be installed with the possibility of expanding to four in the future.
The Facilities Division is providing signage and JPL Security has assigned extra officers during construction. “This project has been needed for a long time, and we hope to get it done quickly, and with the least amount of disruption to the JPL community,” said construction manager BERNIE BAKKEN. “The new traffic flow means that JPLers need to be alert, slow down and be aware of pedestrians

and slow-moving construction vehicles,” said parking coordinator CHUCK BOLES.
For questions contact Bakken at ext. 4-4654 or Boles at ext. 4-4586.
New Millennium studies selected
NASA's New Millennium Program, managed by JPL, has selected 13 organizations to study advanced technologies that may fly in 2004 and 2005 as part of the Space Technology 7 Project.
Space Technology 7 will test and validate advanced technologies that may become part of future NASA space missions. The newly-contracted studies will be completed by November.
“The Space Technology 7 integrated system flight validation concepts are very challenging advanced technologies,” said DR. CHRIS STEVENS, New Millennium



Gael Squibb

Program Manager at JPL. “I am very pleased by the number and quality of the responses to the solicitation and look forward to the results of the ST7 Concept Study Reports.”
The technology concepts are Aero-Entry/Capture/Maneuver; Autonomy and On-Board Processing; Disturbance Reduction System; and Solar Sail System. JPL is involved with providing technology concepts for the Autonomy and On-Board Processing and Solar Sail studies.
In December 2001, a NASA review board at will evaluate the reports and select which technology will fly.
For a list of concept providers and other details, go online to <http://nmp.jpl.nasa.gov/st7>.

3 JPL Earth proposals selected
NASA has selected three Earth Science and Technology Directorate proposals from 288 proposals submitted worldwide to the Carbon Cycle Science NASA research announcement.
• Principal Investigator DR. MARY-ELENA CARR (Research Element 3237) will carry out an intercomparison study of algorithms that estimate marine primary productivity from SeaWiFS and Moderate Resolution Imaging Spectrometer (MODIS) satellite ocean color measurements.
• Principal Investigator DR. MAHTA MOGHADDAM (3340), with co-investigators DR. KYLE MCDONALD (3235) and DR. SASAN SAATCHI (3340), will use satellite synthetic aperture radar data recorded from Japanese and European satellites to characterize the biomass of Alaska and Canada.
• Principal Investigator DR. ERNESTO RODRIGUEZ and co-investigator DR. SCOTT HENSLEY (both of 3340), will combine lidar and radar interferometry measurements from airborne and SRTM and IceSat satellite missions to estimate the total carbon stored in mature and regrowing forests.

Permit zones to affect Caltech parking
Beginning as early as Sept. 16, a permit parking zone will take effect along the perimeter of Polytechnic School and on Cornell Street, which bisects its campus. This zone on the west side of Wilson Avenue immediately across from Caltech will be posted with signs indicating parking from 8 a.m. to 3 p.m. on school days is available only to those with a Poly permit,
The net effect of this zone change will mean that Caltech/JPL employees who frequent the buildings on Wilson Avenue (SIRTF, IPAC and Braun Athletic Center) during regular Poly school hours will need to find parking elsewhere on campus. Maps indicating the affected parking areas will be posted at the entrances of Wilson Avenue buildings.
Call GREGG HENDERSON (Caltech Security) at (626) 395-4187, or HALL DAILY (Caltech Government & Community Relations) at (626) 395-6256.

Special Events Calendar

Ongoing Support Groups
Alcoholics Anonymous—Meetings are available. Call the Employee Assistance Program at ext. 4-3680 for time and location.

Codependents Anonymous—Meeting at noon every Wednesday. Call Occupational Health Services at ext. 4-3319.

End of Life Issues and Bereavement—Meets the second Monday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Gay, Lesbian and Bisexual Support Group—Meets the first and third Fridays of the month at noon in Building 125-133. Call the Employee Assistance Program at ext. 4-3680 or Randy Herrera at ext. 3-0664.

Parent Support Group—Meets the third Thursday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Senior Caregivers Support Group—Meets the first Tuesday of the month at noon. For location, call the Employee Assistance Program at ext. 4-3680.

Tuesday, August 21
JPL Hiking+ Club—Meeting at noon in Building 238-543.

Wednesday, August 22
Investment Advice—One-on-one counseling sessions are available with Fidelity. For an appointment, call (800) 642-7131.

JPL Toastmasters Club—Meeting at 5 p.m. in the Building 167 conference room. Guests welcome. Call Joy Hodges at ext. 4-7041.

“New Developments in JPL Teleconferencing”—Denise Kulp of Network Operations will provide an overview of voice and data conferencing tools that enable individuals to participate in meetings from any location at any

time. To be held at noon in Building 180-101. Sponsored by Institutional Computing and Information Services.

Wednesday, August 29
Investment Advice—One-on-one counseling sessions are available with Fidelity. For an appointment, call (800) 642-7131.

Thursday, August 30
JPL Golf Club—Meeting at noon in Building 306-302.

Von Kármán Lecture Series—Dr. Lucile Jones, visiting research associate at Caltech and scientist-in-charge for Southern California, U.S. Geological Survey, will present “Earthquake Prediction: A Practical Approach to an Impossible Problem” at 7 p.m. in von Kármán Auditorium. Open to the public.

Friday, August 31
Von Kármán Lecture Series—Dr. Lucile Jones, visiting research associate at Caltech and scientist-in-charge for Southern California, U.S. Geological Survey, will present “Earthquake Prediction: A Practical Approach to an Impossible Problem” at 7 p.m. in The Forum at Pasadena City College, 1570 E. Colorado Blvd. Open to the public.

Thursday, September 6
Eldercare and Caregiving Issues—JPL's Employee Assistance Program and the Senior Caregivers Support Group will host an important program for those dealing with assisting their aging relatives. Following the success of presentations on this topic in 2000, an expert panel of professionals has been reconvened, including Ian Binder, an expert in long-term care insurance; Margie Thornhill, RN, a geriatric care coordinator with Huntington Hospital Senior Care Network; and David Bunn, an attorney who specializes in elder law and probate. To be held from 11:45 a.m. to 1 p.m. in von Kármán Auditorium.

Mission architect interns named

Three JPL researchers have been selected to participate in the two-year Mission Architect Development Program starting this fall. Robert Shotwell, Dr. Frank Webb and Dr. Greg Wilson were chosen for the program from a field of 20 applicants.
Now in its sixth year, the program is administered by JPL's Center for Space Mission Architecture and Design. The objective of the program is to develop the next generation of mission architects who will design and implement future JPL missions.
The internship will be tailored to fit participants' individual needs with educational opportunities and job assignments aligned with their professional interests and areas of expertise. Interns will be paired with a JPL mentor for guidance and counseling.
Shotwell, who recently joined the Mission and Systems Architecture Section (311) after leaving the Advanced Propulsion Concepts Group (3534), is currently the JPL lead for the Phase II In-Space Transportation Propulsion future technologies study led by Marshall Space Flight Center. Shotwell, who started at JPL in 1993 as a technical co-op student, is also the chief systems engineer for NASA's proposed Comet Nucleus Sample Return project and is in the



Robert Shotwell



Dr. Frank Webb



Dr. Greg Wilson

process of reconstructing a microspacecraft program at JPL.
Webb is currently the supervisor of the Satellite Geodesy and Geodynamics Systems Group in Section 335, and is also the Project Element Manager of the Southern California Integrated GPS Network. He began at JPL as a member of the technical staff in 1990.
Wilson, who joined JPL in 1998, is a research scientist in the Geophysics and Planetary Geosciences Group in Section 323, and is the science lead for Mars Advanced Concepts. He has been involved in developing, delivering and operating in-situ instruments on Mars Pathfinder and Mars Polar Lander.



For the past few months construction crews have been busy welding, jack-hammering, and generally making a lot of noise and dust adjacent to

the Red Planet Cafe. What could possibly be in the works? Universe caught up with Suzanne Bradfield, manager of Employee Services and Recognition, and Bertha Hines, assistant administrator of Employee Services and Recognition, and asked them what all the noise was about.

What is going on behind the Red Planet Cafe?

S B It's JPL's new wellness and fitness facility, called "The Wellness Place." It is located in Building 167-111, adjacent to the Red Planet Cafe and 167 conference room. We anticipate the grand opening of this room to be on Monday, Sept. 10.

How did The Wellness Place come to exist?

S B In the summer of 1999, Human Resources randomly surveyed JPL employees regarding their ideas on becoming an "Employer of Choice." One of the most requested items was fitness classes. The Executive Council approved a recreation room as part of JPL's "Employer of Choice" initiative. It is funded out of the Caltech Award Fee.

What is the Caltech Award Fee?

S B Caltech receives a fee from NASA for operating JPL. The amount of money that Caltech receives is based on the agency's report card for JPL. As an incentive, Caltech has, in recent years, returned some of that award fee to JPL, based on the Lab's outstanding performance.

How does this project relate to JPL's "Employer of Choice" goals?

S B A commitment to wellness and work/life balance is a strong component of the "Employer of Choice" initiative. To be considered an "Employer of Choice" one must offer, in addition to the obvious things like salary and basic benefits, some intangible benefits that employees find valuable. In today's health-conscious environment, The Wellness Place will allow JPL employees to address wellness and fitness issues right here on Lab.

Why are you calling it "The Wellness Place?"

S B Because of the wellness activities it will encompass. JPL is dedicated to promoting the long-term physical and mental well being of its employees, through fitness classes and wellness seminars.

What kinds of activities will be offered?

B H Initially, we will have yoga classes. We are working on implementing aerobics and tai chi classes in the future. Classes will be organized into six-week sessions with two, one-hour classes per week and individual (non-session-based) classes. All classes will take place before work, noon-time and after work.

Are contractors eligible to take classes?

S B Unfortunately, due to space constraints this program is available to JPL employees only.

How much will it cost to participate in the programs and classes?

S B As part of the Employer of Choice initiative, all initial classes (yoga, aerobics, tai chi) will be paid for with Caltech Award Fee money. As our curriculum increases, it may become necessary to charge employees a nominal fee.

How does one enroll to participate?

B H Employees must go online to the Employee Services & Recognition Wellness Place Web site at <http://eis/sec614/reward/wellnessplace/index.htm> and enroll via the Registrar system. There will be a maximum capacity of 25 employees per class. If the class is filled, the employee will be put on a waiting list, similar to signing up for any Professional Development course. Should any employee sign up for a class and not attend, they will be pulled from the class after two no-shows, in order to make space available for other employees.

Is a medical release necessary to participate?

B H Yes. The prerequisite to signing up for any fitness class is a basic health screening with Occupational Health Services. To select a date for screening, employees must enroll via the Registrar system. A follow-up phone call to OHS at ext. 4-3319 is required to schedule the screening.

Will The Wellness Place be available for other activities?

S B It will be used for "wellness seminars" such as Weight Watchers and Parent Support Groups. It will not be used as an open conference room for JPL employees to use.

Is the JPL gym getting a facelift too?

S B Yes. With Caltech Award Fee money, the Employee Services and Recognition Office has purchased upgraded equipment for the Building 180 gym, including treadmills, upright and recumbent stationary bikes, elliptical cross-trainers, additional free weights and additional workout benches. Also, we are instituting a new locker assignment system to maximize availability for frequent gym users. The gym improvements will be completed by mid-September.

Who should employees contact for additional information?

S B JPLers are welcome to contact me at ext. 3-4067 or Bertha at ext. 4-3706, or refer to the Employee Services and Recognition Web site at <http://eis/sec614/reward/wellnessplace/index.htm>.

The Wellness Place, set to open next month, will offer a respite from the workday routine

BE WELL



Suzanne Bradfield, left, and Bertha Hines

Passings



Jack James

JACK JAMES, 80, a retired JPL assistant Laboratory director and project manager, died Aug. 7 in Pasadena.

James, who retired from the Lab in 1986 as assistant Laboratory director for Technology and Space Program Development, joined JPL in 1950. Over the next 10 years he progressed from group supervisor to section manager, division manager and then deputy manager of the Sergeant Project, the first U.S. inertially guided ballistic missile.

James was project manager for Mariner II, which flew by and took measurements of Venus in December

1962, and also managed Mariner IV, which flew by and photographed the Martian surface in July 1965. In 1967, he began a 10-year stint as Assistant Laboratory Director for Technical Divisions before taking his final position at the Lab.

He earned NASA's Public Service Award for managing Mariner II, and garnered the agency's Scientific Achievement Medal for managing Mariner IV. He also authored several papers on those two missions.

James is survived by his wife, Ruth; sons Jeff, Jerry and Jack; daughter Susan; and grandsons Jason and Cody.

A memorial service was scheduled for Aug. 18, at 10:30 a.m. at the La Canada Presbyterian Church, 626 Foothill Blvd., with a memorial reception following at Caltech's Athenaeum, 551 S. Hill St., from noon to 3 p.m. In lieu of flowers, James' family requested donations be made to the University of Tennessee, Arnett A. Elliot Fund, University of Tennessee Development Office, 226 Ayres Hall, Knoxville, TN, 37996-1320.

WILLARD BOULTER, 72, a retired quality assurance engineer in Section 354, died of cancer July 6 at his home in Whittier.

Boulter worked at JPL from 1963-93. He is survived by his wife, Janet, four children and eight grandchildren.

Memorial services were held at Plymouth Congregational Church in Whittier. Burial was private.

MICHAEL WONCIK, 74, a retired member of the technical staff in Section 339, died of pneumonia July 26.

Woncik joined the Lab in 1972 and retired in 1992. He is survived by his wife, Nancy, daughter Pamela, son John and a grandchild. Services were private.

DONALD LEWIS, 80, a retired electrical engineer in Section 374, died of a heart attack July 29.

Lewis joined JPL in 1959 and retired in 1988. He is survived by his wife, Beverly, three children and seven grandchildren. Services were private.

CHARLES SCHUTZ, 69, retired deputy division manager of human resources, died of cancer July 31.

Schutz worked at the Lab from 1979-97. He is survived by his wife, Joyce, and son Christopher. Services were private.

GEORGE TETSUKA, 77, a retired senior engineer in Section 375, died Aug. 4 at a convalescent hospital.

Tetsuka worked at the Lab from 1956-89. he is survived by his wife, Charlotte, son Shigemi Shimizu, daughter Joanne Ferris, and eight grandchildren. Services were private.

Letters

Heartfelt thanks to all of my co-workers in the Office of Communications and Education, and all those at JPL who showed their support and concern at the sudden loss of my husband Bob. My family and I greatly appreciate the many cards and the beautiful flowers we received. Our thanks also to the ERC for the beautiful plant. I feel truly blessed to have so many thoughtful, caring friends at JPL.

Maggie Porter,
Public Services Office

Bob and I would like to thank our co-workers and friends for the support during the recent illness and passing of his mother. Many thanks to the ERC for the beautiful plant we received in her memory.

Bob and Mona Witkowski

Retirees

Odell Raper, 43 years, Section 321; Kirk Dawson, 39 years, Section 100; Sharon Pasos, 31 years, Section 312; Bennie Falin, 28 years, Section 930; Stephen Dermenjian, 16 years, Section 386; Robert Kerr, 12 years, Section 314; C. Nelson Carter, 12 years, Section 274.

Classifieds

For Sale

AIR CLEANER, Honeywell Enviracare, portable, Hepa filter, like new, cost \$300, sell for \$150; CARPET CLEANER, Bissell power steamer-wet vac., used once, exc. cond., \$150 new, sell for \$75; STRING TRIMMER/BUSH CUTTER, Sears Homelite, 2-cycle gas engine, vg cond., \$180 new, sell for \$90. 367-8257.

AUDIO EQUIPMENT, subwoofer, Infinity, award winning, HPS-1000, w/built-in amp, 1000W and 15" driver, vg cond., \$400. 626/441-2357. BEDROOM SET, girls, charming, incl. headboard, twin bed w/canape, bedspread, sheets, etc., dresser, mirror, nightstand + many accessory pieces, all matching, \$400/obo. 626/791-1581.

BIKE, road, specialized 1988 Sirrus, 20" frame, 12 spd, Shimano equipped, Cadence Cycle Com- puter installed, owner's manuals, great shape, recently tuned, \$200/obo. 626/574-3958 eves./ wknds.

BLINDS, vertical, vg cond, 7' 1" and 6', PVC, off-white; SHUTTERS, vg cond., wood, 2 sizes. 626/794-1716, eve.

CABINET/SIDEBOARD, Chinese rosewood, sideboard 5' long, alter table 6.5' long, carved w/ dragon motif, not antiques, exc. cond., photos/ measurements avail. on request, \$625/both; DINING TABLE, golden-oak, round claw-foot dining table w/3 leaves & 5 chairs. 952-8455.

CAMERA KIT, IPIX professional, for dynamic 360-degree virtual tours, includes Nikon digital camera, CoolPix 950, Nikon fisheye lens, Nikon 950 poly cast camera mount, tripod and base assembly, adaptor card, 48 MB flash card, 6V universal AC power adaptor, Kodak battery charger, 4 AA rechargeable batteries, case and IPX Wizard software for Mac. 952-3032.

COMPUTER, AST 166 MB Pentium, 48 MB RAM, 1 GB drive, CD ROM, modem, speakers, keyboard, Win 95, Office 97 + sw., and HP deskjet 870CSE, \$100. 626/840-0955, Mary, leave msg.

DECK, aluminum, for 15' x 24' vinyl pool, fair cond., best offer. 952-9467.

FURNITURE; sofa sectional sleeper, makes into qn-sz. bed, attractive abstract watercolor design in cream, aqua, mauve, great cond., \$350; coffee table, white oak finish w/glass panels, like new, \$100, photos at ERC or call for e-mail photo. 830-8993, eve & wkend, 903-8979, cell.

GARAGE DOOR OPENER, elec., Chamber-lain, vg cond.; LAWN GENIE, drip mist watering system, new, never used. 626/794-1716.

GUITARS, acoustic, '72 Gibson J45 (vg), all original, vg cond., new hardshell case, orig. owner, \$625; '76 guild G37 (gd.), orig. hardshell case, \$425. 626/915-1800.

HYDROPONIC GARDEN EQUIPMENT, ready to start a garden, best offer. 952-9467.

LUGGAGE CARRIER, rooftop, Sears, fiberglass, \$50. 626/797-6982.

MOVING SALE: Amana refrigerator, white, 4 yrs. old, \$400; Kenmore washer, white, 2 yrs. old, \$250; Kenmore gas dryer, white, 2 yrs. old, \$200; Coleman generator, 3500 W, 100 hrs. op time, \$200; Nordic Track, \$100. 626/798-8065.

PLAY STRUCTURE, Little Tykes, with slide \$35; SANDBOX, plastic turtle; BABY/GIRL ITEMS/ TOYS, new & used; HIKING BOOTS, new, leather, Vasque, ladies size 7; BIRD CAGES, many inexpensive new and used; PET ITEMS. 626/798-6248.

REFRIGERATOR, Hotpoint, 17.6 cu. in., good cond., almond color, \$50. 790-9355, after 6 p.m. weekdays or 9 a.m.- 9 p.m. weekends. RING, diamond cluster, wide Filagree band with eight diamonds, two karats, \$1,200/obo. 626/794-1881.

SLIDE, Little Tykes infant/toddler, canopied, \$12; HALLOWEEN COSTUME, lady bug, infant,

never worn, \$15; PLAY HOUSE/SLIDE, climbing toy, open, \$40; BACK YARD TOY, Fisher Price; ACTIVITY CENTER/PLAYPEN, interlocking, Today's Kids. 626/303-2633.

STEREO, Sears tabletop, am/fm, w/turntable, 33 1/3 and 45 rpm, 8 track and cassette, \$25; TRUCK TIRE, LT, 31 x 10.50, R15, never used, carried as spare, \$35; BIRD CAGE, white, 20 h" x 12" w x 20" l, all accessories, gd. cond., \$20. 367-8257.

TABLE, coffee, oak, w/beveled glass inset, + 2 matching end tables, exc. cond., \$150/all. 661/254-7443.

TABLES, coffee and 2 end, cherry wood, fair cond., \$15/all; BICYCLES, children's, \$15/ea. 626/357-8210.

TABLE, dinette, square glass top 5' x 5' w/metal feet and 4 matching chairs, \$700/obo; BAR STOOLS, four matching, metal frame, all in superb condition, \$300/obo. 626/398-3480.

TABLE, dining room, + 4 chairs, cherry wood top and chair seats, black table, chair legs and trim, \$100; COOLERS, 2, Coleman, large, used once, \$15/ea. 626/357-8210.

TABLE, dining room, 4 chairs and 1 bench, less than a year old, great cond., Asian beech-wood, mission-style, solid, dark stained wood, set includes long table, \$950. 607/277-6861.

TREADMILL, Sears Lifestyle 3000, auto incline, 5.5 mph, \$80. 790-5643.

TWO-WAY RADIOS, Motorola TA280, new in original box, 14 freq., 38 interference codes, 2-mile range, channel scan, VOX, 5.32 oz., great for kids and families at malls or theme parks, \$40 rebate available, retails \$79 each, sell \$100/for pair before rebate. 626/308-2163.

TYPEWRITER, electric, Smith Corona, never used, in portable case, \$20; COFFEE TABLE/ END TABLE, glass top and solid marble base, \$80/obo; CAMERA, manual, Olympus, OM-10, orig. case, exc. cond., w/zoom lens flash and filters, \$140/obo; BACKGAMMON BOARD SET, hand made out of wood and mother pearl inlaid. \$75. 323/722-4412.

Vehicles/Accessories

'96 BUICK Regal, custom, gd cond., air, ABS, near- new tires, new brakes. 951-8376, after 4 p.m.

'87 CHEVROLET K5 Blazer, 6' lift, 35" tires, showcase sound system, new interior, new drive train, rebuilt motor, runs and looks great, 65K mi., \$9,900. 957-3675.

'87 CHRYSLER 5th Avenue, 60,000 mi., silver, automatic, fully loaded, good cond., only 2 owners, \$2,500/obo. 626/791-7313.

'98 DODGE Intrepid ES, white ext. & gry int., exc. cond., loaded, V6, 225 hp, 49K mi., \$12,000/obo. 714/875-9132.

'67 FORD Mustang, 390, 4 spd., S code, new paint, new interior, original LA model, 80% restored, runs great, \$9,000/obo. 626/339-9353.

'68 FORD Ranchero, 390, V8, GT package, C-6 automatic w/console & bucket seats, 90% restored, almost everything new or rebuilt, fresh red paint, correct GT wheels & C stripes, bed liner and hard cover, \$7,500. 952-8984.

HITCH, 5th wheel with tilt, all hardware incl., \$400/obo. 682-2392, leave message.

'96 HONDA Accord LX, 4-dr. sedan, 36,000 mile, red, mostly freeway miles, serviced by Honda dealer only, exc. cond., feels like new, \$12,000. 678-8076 or 595-1453.

'96 HONDA Civic LX, red exterior, gray interior, exc. cond., 69K mi., AM/FM radio, a/c, cruise control, pwr. brakes/door locks/steering/ windows, tilt steering wheel, all maintenance records available, \$8,525. 626/799-3184.

'93 HONDA Accord, LX Sedan 4 dr., automatic, A/C, power steering/windows/doorlocks/ mirrors, tilt wheel, cruise control, AM/FM cassette, exc. cond., new battery, radiator, 135K mi., original owner, \$6,000. 626/914-1737.

'88 HONDA Prelude 2.0 Si, 2 dr., 4 cyl., auto, pwr. steering, tilt wheel, cruise, am/fm/cass., a/c, alloy wheels, moon roof, new tires, 101K mi., runs great, Kelly Blue Book \$4,800, sell

for \$3,600/obo. 626/799-5368, leave message.

'87 HONDA Accord LX, blue, 4 dr., automatic, 133K mi. runs great, \$2,700/obo. 957-8221, eves.

'86 HONDA Civic, 2-dr. hatchback, automatic, 107K mi., excellent engine, needs body work, \$1,500. 248-4637.

'90 JEEP Cherokee Laredo, 4 x 4, 4 door, V6, auto, pwr. windows/door looks, tilt wheel, a/c, am/fm stereo, roof rack, tow pkg., 205K mi., runs great, new starter, battery, major tune-up (plugs, distributor, alignment), good tires, dark red w/gray interior, very clean, very strong engine, gd. cond., \$2,300/ obo. 248-7822, Erika or kdnitro@hotmail.com.

'89 MAZDA MX-6 DX Coupe, 2 dr., 120K mi, white, 5 spd. man., very good cond., \$2,000, firm. 626/358-7055.

'92 MERCEDES-BENZ 300E, 2.6L, silver, 138K mi., at, a/c, p/s, p/b, anti-skid pdl., am/fm/cas-sette, sunroof, elect. front seats, sheepskin seat covers, alloy wheels, rebuilt trans, lots engine updates, recent paint/ glass, well-maintained, looks great, 21 mpg, retail Blue Book \$13,750, sell \$11,000/obo. 891-6836, Steve.

'94 SATURN, 5 sp., 120K mi., \$2,200. 957-3675.

'88 SEA RAY boat, 23' cuddy cabin, 185 orig. hrs., 5.7L motor, Mercruiser outdrive, new upholstery, ship to shore radio, live bait tank, \$11,000/obo. 626/339-9353, Greg.

SEATS, front and back, for Jeep Laredo, factory gray, \$125. 626/359-7666.

'91 SUBARU Loyale, 4-dr. wagon, 149K mi., 5 spd., 2 w/d, must sell, very well maintained, a/c, power, locks, steering & windows, CD player, alloy wheels, tilt wheel, Yakima roof rack, new tires, new clutch, recently repaired, transmission, a/c, & timing belt, runs great, Kelly Blue Book \$3,755, sell for only \$2,500/obo, call for pictures. 507-5632 or 626/379-0969.

'86 1/2 TOYOTA Supra 3.0i, 5 spd., 127K mi., white, tint windows, leather, a/c, stereo, cruise, pwr steering/windows/locks etc., clean, vg cond., full maint. records, \$3,000/obo. 626/796-4218.

Wanted

ANTIQUE LINENS, white on white, hand-embroidered, preferably monogrammed (any monogram), must be in exc. cond. 980-1638. CAMERA, high-end 35mm w/accessories, SLR cameras with separate lenses and other accessories would be ideal. 236-4869, after 5 p.m.

CARPOOLER from Chino Hills, non-smoker, must have car with a/c, only needs to drive once or twice a week. Ext. 3-0828 or 909/465-9868, Allan.

HOUSING, Australian professor visiting JPL seeks rental accommodations for self and family in La Canada school district, Oct 2001 to Feb 2002. 952-1456.

LOVE SEAT, gently used, reasonably priced; HOME COMPUTER, for free or little cost, for mother/disabled daughter. 241-0586.

SPACE INFORMATION/memorabilia from U.S. & other countries, past & present. 790-8523, Marc Rayman.

VANPOOL RIDER, picks up in East Ontario, and San Dimas/Glendora Walmart, full or part time. Ext. 4-7672, Shelley.

WITNESS to car accident on Friday, May 18, 4:15 p.m. on 210 Fwy. East before 134 interchange; accident was between a red Miata convertible and a Peterbuilt 2000 tanker truck. 626/850-4378.

For Rent

ALTADENA house, 2 bd., 1.75 ba., office, detached play/workout room, a/c, cent. heating, washer/dryer hookups, fireplace, newly refinished hardwood floors, new paint inside/out, new linoleum, new stove, nice area near Altadena Golf Course, no pets, non-smokers, available 9/1, gardener and water included, \$1,800. 626/296-2659.

EAGLE ROCK, furn. room in single-family

house, nice area, 10 min/JPL, priv. entrance and bath, share kitchen and laundry privileges, \$350 incl. util. 323/256-1785.

LA CANADA guesthouse, furnished, pool, 1- 3-month lease, non-smoker. 790-1103.

NORTH ALHAMBRA, borders South Pas., 2 bd., 1 ba., upstairs rear unit apt, kitch. furn. w/all appliances, all utilities incl., very private, \$1,200 + \$1,200 dep. 626/570-6123.

PASADENA home, 2 bd, 1 ba., 5 min. from JPL, \$1,500. 626/683-1721, Art.

PASADENA studio condo, 1115 E. Cordova, gated facility, fully furnished, pool, patio, lounge areas, tenant pays electric, carport, laundry, no pets, non-smoker, \$825. 626/792-9053, Marilyn or Ray.

SAN GABRIEL, house to share, on Garibaldi near San Gabriel Blvd, beautiful, 3 bd., 3 ba., Spanish-style, great neighb'rhd, French doors lead from bedrooms to pool, marble foyer with Jacuzzi, water and gardener paid by owner , \$750 + util. 626/390-3046, cell, 626/305-5900 x221, Diane.

SOUTH PASADENA, studio apt, 1718 Huntington Dr. betw. Marengo and Milan Sts, fully furn., util. pd., car space, laundry, no pets, non-smoker, \$750. 626/792-9053, Marilyn or Ray.

Real Estate

PASADENA, completely remodeled, 3 bd., 2 ba., radiant hardwood floors, central air and heating, large fenced yard, 5 min. from JPL, 688 Howard St., \$325K. 626/638-1721, Art.

PASADENA, 4 bd., 2 ba. ranch home nr. end of well-groomed cul-de-sac, 4 mi./JPL, 1,465 sq. ft. on 8,000 sq. ft. lot, built in '81, attached 2-car gar., new tile floors/carpeting/ kitch. appliances, cent. air, f/p, great curb appeal, many fruit trees, \$289,000. 626/797-2731.

PASADENA, exec. condo next to Caltech, totally remodeled, 2 bd., 1.75 ba., 1,200 sq. ft., newly refin. hardwood floors in dining rm, newer appliances, carpet & paint, large balcony just redone, overlooking beautiful trees, top floor unit, park-like setting, walk to Caltech & S. Lake Ave., nice pool & spa, \$249K. 626/585-9048.

SAN DIMAS, 3 bd., 1.5 ba., in-ground pool, brand new central air/heat, extra bonus room, complete 220 upgrade/electrical, backyard in-ground lighting. 909/305-9486.

Vacation Rentals

CAMBRIA, ocean front house, sleeps up to 4, excellent view. 248-8853.

DEL MAR, fully furn. condo, 11/10/01-11/17/01, slps. 6, 2 bd., 1.5 ba., living rm, full kitch., cable tv/vcr, game rm., sauna, pool/spa, laundry rm., bbq area, walk to race track and beach, JPL discont. 626/961-8771.

HAWAII, Maui condo, NW coast, on beach w/ocean view, 25 ft. fr. surf, 1 bd. w/loft, comp. furn., phone, color TV, VCR, micro-wave, d/w, pool, priv. lanai, slps. 4, 4/15-12/14 \$105/nite/2, 12/15-4/14 \$120/nite/2, \$10/nite/add'l person. 949/348-8047.

MAMMOTH, Chamonix condo, 2 bd, 2 full ba., sleeps 6, fully equip'd elec. kitch., incl. microwave & extras, fireplace & wood, color TV, VCR, FM stereo, o/d Jacuz., pool, sun area, sauna, game, rec. & laundry rms., play & BBQ area, conv. to hiking, shops, summer events, daily/weekly rates. 249-8524.

MAMMOTH, Courchevel, fully equipped unit, 2 bd., 2 ba., sleeps 6, summer rates for summer activities, fishing, mountain biking, hiking. 661/255-7958.

OCEANSIDE condo, fully furn., 2 bd., 2 ba., fireplace, full kitchen, quiet, relaxing, beautiful setting at beachside, with BBQ, pool, spa, game room, great ocean view, easy walk to pier and restaurants, sleeps 6, avail. weekly or monthly. 909/981-7492, Jim or Darlene, or dfhaug@yahoo.com.

PACIFIC GROVE hse., 3 bd., 2 ba., f/p, cable, tv/vcr, stereo/CD, well-eqpd kit w/microw, beaut. furn, close to golf, beaches, 17 Mile Dr., aquarium, Cannery Row, JPL discont. 626/441-3265.

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Advertising is available for JPL and Caltech employees, contractors and retirees and their families.

No more than two ads of up to 60 words each will be published for each advertiser . Items may be combined within one submission. Ads must be submitted on ad cards, available at the ERC and the Universe office, Bldg. 186-118 , or via e-mail to universe@jpl.nasa.gov . Ads are due at 2 p.m. on the Monday after publication for the following issue.

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